



# ICAO ENGINE nvPM EMISSIONS DATA SHEET

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: PW307A BYPASS RATIO (-): 4.3  
UNIQUE ID NUMBER: 03P16PW192 PRESSURE RATIO  $\pi_{co}$  (-): 20.2  
COMBUSTOR: TALON II  
ENGINE TYPE: MTF RATED OUTPUT  $F_{oo}$  (kN): 28.5

### REGULATORY DATA

CHARACTERISTIC VALUES:	$LTO_{mass}/F_{oo}$ (mg/kN)	$LTO_{num}/F_{oo}$ (particles/kN)	NVPM MASS CONCENTRATION ( $\mu\text{g}/\text{m}^3$ )
$LTO/F_{oo}$ AND MAX $nvPM_{mass}$	1037.7	8.41E+15	1250
AS % OF CAEP/10 LIMIT	-	-	9.0
AS % OF CAEP/11 LIMIT (InP)	25.7	35.8	
AS % OF CAEP/11 LIMIT (NT)			

### MEASURED DATA

MODE	POWER SETTING (% $F_{oo}$ )	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES*		NVPM MASS CONCENTRATION PEAK $nvPM_{mass}$ ( $\mu\text{g}/\text{m}^3$ )
				$EI_{mass}$ (mg/kg)	$EI_{num}$ (particles/kg)	
TAKE-OFF	100	0.7	0.327	57.0	6.46E+14	
CLIMB OUT	85	2.2	0.272	36.0	6.29E+14	
APPROACH	30	4.0	0.102	6.7	2.88E+14	
IDLE	7	26.0	0.045	272.7	1.92E+15	
LTO TOTAL (kg, mg, number of particles)			144	21268	1.72E+17	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE $LTO/F_{oo}$ VALUES (mg/kN, particles/kN)				746.5	6.05E+15	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ( $\mu\text{g}/\text{m}^3$ )				272.7	1.92E+15	971

\* Emissions Indices are corrected for thermophoretic loss and fuel hydrogen content

### DATA FOR EMISSIONS INVENTORIES (ESTIMATIONS FOR ENGINE EXIT PLANE VALUES)

MODE	POWER SETTING (% $F_{oo}$ )	CORRECTED EMISSIONS INDICES	
		$EI_{mass,SL}$ (mg/kg)	$EI_{num,SL}$ (particles/kg)
TAKE-OFF	100	72.4	2.00E+15
CLIMB OUT	85	47.5	2.19E+15
APPROACH	30	10.2	1.48E+15
IDLE	7	335.1	5.23E+15

### AMBIENT CONDITIONS

			FUEL	
	From	To	HEAT OF COMBUSTION (MJ/kg)	43.06
BAROMETER (kPa)	99.4	100.6	HYDROGEN CONTENT (%mass)	13.46
TEMPERATURE (K)	288.7	291.3	AROMATICS CONTENT (%vol)	21.6
HUMIDITY (kg water/kg dry air)	0.0071	0.0099	NAPHTHALENE CONTENT(%vol)	0.70
			SULPHUR CONTENT (ppm by mass)	41

MANUFACTURER: Pratt & Whitney Canada  
TEST ORGANIZATION: Pratt & Whitney Canada  
TEST LOCATION: Mississauga, Ontario, Canada  
TEST DATES: 30/09/2016-03/10/2016

### REMARKS

1. Data revised to correct calculation errors
2. Data acquired using procedures and systems prescribed in Annex 16 Volume II, Amd. 9
3. Thermophoretic correction applied as described in Annex 16 Volume II, Amd. 9, Appendix 7, Section 6.2.1
4. Data corrected for fuel hydrogen content according to CAEP11.WP91 App.A
5. Export Classification: Technical Data: Yes / ECL: NSR / ECCN: N/A / P-ECCN: 9E991
6. Data reported in ER9043 Part II Rev. C